

Conservation Biology Syllabus

Department of Biology

BIOL3065 Winter 2025

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral, current and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.

Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

In BIOL3065 all students are welcome regardless of race/ethnicity, gender identity or expression, sexual orientation, socio-economic status, age, or any other diverse aspect or identity.

Course Instructor(s)

Name	Email	Office Hours
Derek Tittensor (instructor)	derek.tittensor@dal.ca	After lectures or by appointment
Esteban Salazar Cervantes (TA)	es687534@dal.ca	After lectures or by appointment

Course Description

This course offers an introduction to conservation biology: the science of understanding and conserving biodiversity on Earth. Students learn how biodiversity change is assessed and the tools used to prevent the extinction of species and the disruption of ecosystems. Tutorials involve oral presentations by students with discussion and questions on controversial topics in conservation. Over the course of the term students will also engage in a personal conservation project aiming to apply lessons learned during the class to their own personal life practices.

Course Prerequisites

BIOL 2060.03 or BIOL 3001.03

Course Exclusions

None

Course Structure

Course Delivery

The primary mode of delivery for the course is in-person. One or two lectures may be pre-recorded for asynchronous online viewing. Students connecting to online resources from outside Canada are responsible for ensuring awareness and compliance with any applicable laws in the country from which they are connecting.

Lectures

MON 13:35 – 14:25, Room 304, Sir James Dunn Building

WED 13:13 – 14:25, Room 304, Sir James Dunn Building

Tutorials

FRI 12:35 – 14:25, Room C337, Life Sciences Centre

Course Materials

All course materials (class slides and any relevant scientific papers) will be posted on Brightspace. A complementary but non-prerequisite textbook (Sodhi NS, Ehrlich PR 2010. Conservation biology for all. Oxford University Press Oxford, UK) is freely available as PDF from:

<http://www.mongabay.com/conservation-biology-for-all.html>

Scroll down that page and click on FREE FULL TEXT DOWNLOAD.

If 1-2 lectures are pre-recorded, minimum technology for viewing will be a hardware platform that can be used to access Brightspace; no mic or camera is needed.

Assessment

Students will be graded according to the scheme below, weighing their grades in the personal conservation assignment, the online Brightspace quizzes, and the weekly tutorial with its presentation assignment. Details on these assignments are found below.

Component	Weight (% of final grade)	Date
Personal conservation assignment (term project)	40	Final project due Apr. 7th , but requires work over the duration of the semester
Tutorial research assignment (oral presentation to class)	30	Assigned individually
10 online quizzes (3% each)	30	Mondays from 20 Jan. Quizzes open from 8am to midnight each Monday ; 20 minutes to complete quiz once started.

There is no final exam in this course.

Major rubrics for grading lecture style presentations (30% of final grade):

- Clarity and Organization (10%)
 - Well-organized, easy-to-read slides
 - Clear and logical structure
 - Well-explained content
 - Clear take-home messages
- Speaking Style (10%)
 - Well-worded and comprehensible
 - Loud and clear and well-paced
 - Projecting voice to audience, engaging
 - Clear and scientifically reasonable answers to questions
- Content (10%)
 - Well-thought-out representation of the argument
 - Demonstrated knowledge and proper citation of relevant papers
 - Intelligent and synthetic discussion
 - Conclusions are clear and sound

Online (Brightspace) quizzes:

Quizzes will **ONLY** be available on **Mondays starting on the 20th January for 10 weeks, from 8am until midnight**, with each quiz being worth 3% of the final grade. Each quiz will have a 20-minute time limit once started, and will be based on the previous week's lecture material (and student tutorial presentations) only.

Other course requirements

Attendance at and engagement in the tutorial **is mandatory**. Lack of participation and engagement during the tutorial discussions will mean that you miss out on a key component of the course, as well as not supporting your fellow students and their presentations. **Note that in addition to class material, there may be questions on tutorial material in the weekly online quizzes.**

Conversion of numerical grades to final letter grades follows the

[Dalhousie Grade Scale](#)

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (0-49)
A- (80-84)	B- (70-72)	C- (55-59)	

Course Policies on Missed or Late Academic Requirements

- This is a highly interactive class and students need to always attend tutorial sessions and contribute to class discussions, as well as ask questions of student presenters. Missing more than 2 tutorials without a Student Declaration of Absence (SDA) form will lower the grade on in-class activities.
- All assignments have a strict deadline; late assignments will be docked 10% per day late; missed assignments and quizzes will count 0%; with the following exceptions:
- In case of illness, please use the Student Declaration of Absence (SDA) form for late or missed academic requirements. Late penalties will not apply if SDA is submitted prior to the due date. Maximum 2 uses of the SDA per term. Students who are ill for an extended period and thus miss multiple requirements should be referred to the Assistant Dean (Student Affairs).
- If excused due to an SDA, we will provide alternative arrangements.

Course Policies related to Academic Integrity

Student presentations are individual, as is the personal conservation assignment – students are not allowed to work together on any aspect of the course. Plagiarism-checking software will be used if there is a suspicion that plagiarism has occurred. Tutorial presentations should not contain generative AI images or video. Large Language models (e.g. ChatGPT) should not be used to write assignments or develop presentation slides; the expectation is that a student's work is their own. Developing critical thinking and written / oral explanatory skills is a key part of this course.

Learning Objectives

- Learning about the basics of conservation biology, such as fundamental processes that affect populations, species, and communities in today's world
- Learning how specific human impacts influence animal and plant populations, as well as the communities and ecosystems in which they are embedded.
- Learning about diverse conservation and management approaches including topics such as conservation genetics, protected area design, international biodiversity policy, and restoration ecology, among others
- Researching a current topic in conservation biology, and presenting orally the state of knowledge, conservation actions, and possible controversy
- Discussing current topics in conservation biology in class and tutorials, and critically evaluating the science and societal discourse surrounding this topic
- Applying the lessons learned to your own daily life practices

Course Content

Provisional schedule; subject to change

Block 1: Introduction: Conservation of biological diversity

- Jan 6 (Mon) Introduction
- Jan 8 (Wed) What is conservation biology?
- Jan 13 (Mon) Basic threats to biodiversity (1)
- Jan 15 (Wed) Basic threats to biodiversity (2)
- Jan 20 (Mon) Climate change and biodiversity
- Jan 22 (Wed) Extinction, the Anthropocene, and the future of biodiversity

Block 2: Conservation of populations and species

- Jan 27 (Mon) Population and species-level conservation
- Jan 29 (Wed) Conservation genetics and metapopulations
- Feb 3 (Mon) Conservation genetics and extinction (*guest lecture*)
- Feb 5 (Wed) Population viability analysis
- Feb 10 (Mon) Valuing biodiversity

Block 3: Conservation of communities and ecosystems

- Feb 12 (Wed) Macroecology and conservation
- Feb 17 (Mon) MID-TERM BREAK
- Feb 19 (Wed) MID-TERM BREAK
- Feb 24 (Mon) Conservation and advocacy (*guest lecture*)
- Feb 26 (Wed) Protected area design and selection (1)
- Mar 3 (Mon) Protected area design and selection (2)
- Mar 5 (Wed) Marine protected area networks
- Mar 10 (Mon) Conservation of highly migratory species
- Mar 12 (Wed) Restoration ecology
- Mar 17 (Mon) Marine conservation in Nova Scotia (*guest lecture*)
- Mar 19 (Wed) Conservation and resource management

Block 4: Conservation and sustainability

- Mar 24 (Mon) Technology and software approaches to conservation biology
- Mar 26 (Wed) Aquatron tour (*subject to availability*)
- Mar 31 (Mon) International biodiversity policy
- Apr 2 (Wed) Synthesis
- Apr 7 (Mon) Open for discussion, interaction

Tutorial Schedule and Topics:

- Jan 10 (Fri) Introductory Tutorial, choice of topics, information on assignments
- Jan 17 (Fri) Talks and discussion: The role of Conservation Biology
- Jan 24 (Fri) Talks and discussion: Climate change and conservation
- Jan 31 (Fri) Talks and discussion: Extinctions
- Feb 7 (Fri) Talks and discussion: Population conservation
- Feb 14 (Fri) Talks and discussion: Biodiversity benefits to people
- Feb 21 (Fri) MID-TERM BREAK
- Feb 28 (Fri) Talks and discussion: The economy vs conservation
- Mar 7 (Fri) Talks and discussion: Protected Areas
- Mar 14 (Fri) Talks and discussion: Human-environment relationships
- Mar 21 (Fri) Talks and discussion: The social factor in conservation
- Mar 28 (Fri) Talks and discussion: The future of conservation
- Apr 4 (Fri) Overflow slot for missed talks

Six talks (student presentations) will be held at each Monday Tutorial.

Online Brightspace quiz schedule (every Monday)

- Jan 20 (Mon) Quiz 1
- Jan 27 (Mon) Quiz 2
- Feb 3 (Mon) Quiz 3
- Feb 10 (Mon) Quiz 4
- Feb 17 (Mon) MID-TERM BREAK: NO QUIZ
- Feb 24 (Mon) Quiz 5
- Mar 3 (Mon) Quiz 6
- Mar 10 (Mon) Quiz 7
- Mar 17 (Mon) Quiz 8
- Mar 24 (Mon) Quiz 9
- Mar 31 (Mon) Quiz 10

Details on Assignments (PLEASE READ CAREFULLY)

1. Personal Conservation Assignment

This is a term project for each student that aims to document a personal conservation project conducted by each student **over the course of the entire semester**. Each student will engage in his or her own project worth 40% of their final mark. This will be a personal project aiming to apply lessons learned during the class to your own personal life practises. Students will engage in a research project, communications initiative, and personal lifestyle change over the duration of the term and will report on this through a **detailed written report that must also a 150-word lay audience summary and include visual material (photos, graphs, or videos)**. Students must work in this project individually.

At the beginning of semester students will self-assess where in their life they could affect realistic changes or make a contribution to conservation that may result in a positive difference for the planet and its biodiversity. It is advised that you discuss project ideas with the instructor/TA. You will carefully document over the course of the term:

- What you did and why you did it (a clear rationale needed, supported by relevant facts and literature)
- How you kept track of outcomes (what you measured)
- What the total cost and benefit of the project was (in financial, time, or other terms)
- How this has changed your life, or your views
- How results were shared, communicated, and received by others

Examples from past projects include, for example:

- Attempts to reduce or eliminate plastic waste
- Organising beach cleanups
- Giving up fast food
- Reducing or eliminating meat consumption
- Volunteering for an environmental organisation
- Monitoring and cutting down on energy usage
- Developing pollinator-friendly gardens

EXAMPLE: if the goal is to reduce meat consumption, you would assess the amount of meat consumed in a week or two prior to making the change, then keep track of any meat consumption after you made the change, then graph the results over time. It would be interesting to also measure the effect this change has on the weekly grocery bill, carbon footprint, personal health and well-being, for example. At the end of the term, the student **hands in a 3-part assignment**

1. **A write-up of the project results in an essay or report form**, explaining what was done, how outcomes were assessed,
2. **A visual presentation of the data and results in graphical form** (infographic, photos, video, data tables and graphs)
3. A **maximum 150-word summary aimed at explaining the results to lay audiences** that explains how this life-style change worked out overall and you learned.

The completed assignments must be sent to **your TA Esteban Salazar Cervantes** (es687534@dal.ca)

by the end of term (April 7th). There should be an effort to communicate results to others in your circle, for example through social media or other means.

Students will **NOT** be assessed on whether a large or small change was attempted or whether the project was overall successful. They **WILL** be assessed on how well the project is documented, in terms of the quality of the writing, the data, and the content of the project. Projects **MUST** include data that were collected. Extra points will be given for truly original ideas and efforts to reach and inspire other audiences.

2. Tutorial Research Assignment (oral presentation)

There is an oral presentation assignment in the tutorial portion of this class, worth 30% of your final grade. At ONE tutorial in the semester you are expected to give a **NO MORE THAN 10 min science presentation including slides** on a principal question in conservation biology (topics will be assigned individually). We this assignment to be based largely on information extracted from the primary scientific literature: i.e. academic journals, which can be accessed easily by Dalhousie library databases, or via science search engines such as <http://scholar.google.ca/>. The material should not be based on grey literature (websites, news reports etc).

We consider this assignment to be a very important component of the course as it should indicate whether you have understood the relevant theoretical concepts, whether you can critically read, evaluate and synthesize the scientific literature, and whether you are able to present your findings. It is very important in the context of this class to present a balanced argument - that is to look at a question from different angles. Conservation topics are usually multifaceted and do not typically present themselves to easy 'quick-fix' solutions. It would be good to bring out these complexities in your assignment, while also attempting to arrive at a clear conclusion. After your presentation there will be a discussion of your topic by the class and questions. Look at it as an opportunity to dive deeper into a specific conservation topic.

Please also remember to submit your presentation slides via Brightspace.

Suggested procedure for preparing your presentation

- 1) Think carefully about the question, what it means, read up on the topic in textbook or elsewhere, make sure you understand the topic and question well. If in doubt, discuss with the TA/instructor.
- 2) Read the primary scientific literature and find out what the main viewpoints and discussions on this topic or question are.

3) Think about how the following relate to the principal question:

- Which information is relevant, and which addresses a different question?
- Do different authors disagree, and if so, what is their source of disagreement?
- Can you extract some of the underlying data and summarize or analyze it yourself?

4) Outline your talk, focusing on a clear but balanced discussion. Summarize some of the underlying data to illustrate your main points; you would typically do this in a data graph, or in some cases in a map or flow chart. Substantiate your statements with citations from the literature (see below).

5) End your talk with a concluding slide, where you briefly sum up what you think is the key message.

6) All sources should be cited on each slide with author name and year, e.g. **(Carpenter et al. 1985)**. In the very end of your talk please add a slide entitled 'references' which lists alphabetically all the literature sources cited. Use a common, standardized style that you find in scientific papers, e.g.

Carpenter, S. R., Kitchell, J. F., & Hodgson, J. R. (1985). Cascading trophic interactions and lake productivity. *BioScience*, 634-639.

(this is the APA citation style, but you may choose another one – just be consistent and don't mix styles)

Some notes on style:

- 1) Use proper English, crafted into short, clear sentences. Do not use colloquial language or slang. Avoid complicated sentence structure, jargon and acronyms (if you must use acronyms define them upon first use)
- 2) Pay close attention to spelling, grammar, sentence, and paragraph structure.
- 3) Do NOT excessively quote directly from the articles you have read. Paraphrase and cite appropriately.
- 4) Extracting sentences from the literature (even if somewhat modified) is not appropriate and considered plagiarism. Try to explain what the author means in your own words.
- 4) Every idea that is not yours or that is not common knowledge MUST be cited. For example you may want to state that 'predatory fish introductions to lakes can result in trophic cascades (Carpenter et al. 1985).' Carpenter et al. is the source for that statement and needs to be listed in the References as:

Carpenter SC, Kitchell, JF, Hodgson, JR (1985) Cascading trophic interactions and lake productivity. *Bioscience* 35: 634 - 639.

HOW TO STRUCTURE YOUR TALK:

You may follow the traditional style of

- Introduction / Outline
- Methods

- Results
- Discussion and Conclusion
- Summary

or come up with your own style. However, this should always include an Introduction and a “take-home-message” or conclusions. DO NOT simply read your slides to the audience, but have key bullet points that you then elaborate on verbally. In your talk you should also present some graphical, scientific material (e.g. plots, graphs, maps, charts). Be prepared to engage with the rest of the class in a discussion following your presentation.

Do not cram too much information into your slides, which should be simple, well organized, and clear. They are used to illustrate your talk, and should contain mostly graphical material and only brief bullet points. Use large fonts so people can actually see what is written. Explain graphs and what they are showing.

Speak slowly and clearly and project your voice to the audience. Look at the class, not at the overheads. Always emphasize the key points (what people should remember) and use carefully chosen examples to illustrate them. Often one well-explained example is better than three or four that are rushed through.

Do practice your talk multiple times ahead of class (ideally in front of a group). Time your talk when you practice it. If it is longer than 10 minutes you need to shorten and leave some things out.

***** Please check with your TA if you have any questions about the assignments *****

Student Resources

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: <https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html>

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: <https://libraries.dal.ca/>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: <https://libraries.dal.ca/services/copyright-office.html>

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html

Student Advocacy: <https://dsu.ca/dsas>

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

Chemical Safety: <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

Radiation Safety: <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

Scent-Free Program: <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

University Policies and Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding the Indigenous Student Centre can be found at: https://www.dal.ca/campus_life/communities/indigenous.html

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: <https://www.dal.ca/about-dal/internationalization.html>

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (<https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html>)

Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: <http://www.dal.ca/cultureofrespect.html>

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at:

https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html

Originality Checking Software

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at: <https://www.dal.ca/about/leadership-governance/academic-integrity/faculty-resources/ouriginal-plagiarism-detection.html>

Student Use of Course Materials

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.